

ABSTRACT

Substantial improvements in frequency reuse in microwave communications systems is achieved by canceling co-channel interference and transmitter leakage. Interferometric beam-narrowing reduces beamwidth without reducing peak magnitude of the beam pattern. Frequency-dependent beam-shaping compensates for frequency-dependent distortions of the beam pattern thereby improving bandwidth. A spatial demultiplexing technique utilizes spatial gain distributions of received signals to separate signals, even from co-located transmit sources, and uses microwave lensing to enhance received spatial gain distributions. Predetermined cross-polarization interference is used to separate differently polarized receive signals. A reference branch provides a cancellation signal to a receiver to cancel transmitter leakage signals. An error signal controls an impedance-compensation circuit that is responsive to changes in antenna impedance but not to receive signals. A dc bias magnetic field applied to a magnetic permeable material adjusts non-linear distortion in a cancellation circuit for canceling distortion in a transmitter leakage signal. Discreet impedance elements approximate a circuit having distributed impedance.

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